

Cleanup Levels for Lead

- Soil cleanup levels for unrestricted land uses (Today's focus)
- Cleanup levels for lead in other media (Today's discussion on policy options will inform this evaluation)
- Implementation considerations

Current MTCA Lead Cleanup Levels

- Unrestricted Land Use Soils = 250 mg/kg (Table 740-1)
 - Young children = sensitive population group
 - Neurological development = critical effect
 - Acceptable blood lead level = 15 ug/dL
 - Slope factor model used to estimate soil level that would prevent blood lead levels > 15 ug/dL in 99% of children
- Industrial soils = 1000 mg/kg (Table 745-1)
- Ground water = 15 ug/L (Table 720-1)
- Sediments = narrative standard

Why does Ecology believe the lead cleanup levels need to be updated?

1. Numerous new studies have been completed since 2001
 - Health risks below 10 ug/dL
 - Non-linear dose/response/No identifiable threshold
 - Additional health endpoints
2. Reviews and recommendations from scientific experts
 - MTCA Science Advisory Board (2004)
 - Advisory Committee on Child Lead Poisoning Prevention (2005)
 - Clean Air Science Advisory Committee (2006-2008)
 - DOH Expert Committee (2008)
3. Refinements to child and adult lead exposure models

Process for Calculating Lead Cleanup Levels

1. Select exposure model to characterize relationship environmental concentrations and blood lead levels
2. Calculate a soil concentration that is unlikely to result in a blood lead level above the target level

Ecology is looking for feedback and discussion on two key questions:

- What target blood lead concentration should Ecology use when establishing cleanup levels?
- How should Ecology determine when a level is “unlikely” to cause blood lead levels above the target level?

Lead Exposure Model

- Integrated Exposure Uptake Biokinetic (IEUBK) Model used for unrestricted areas
- Adult Lead Model used for industrial properties

Integrated Exposure Model

- Traditional approach used by EPA Superfund & states
- Approach used in 2001 and 2004 Ecology work
- Considers lead exposure from site and other sources (e.g. food, public drinking water)

Soil-Only Exposure Model

- Approach used by Cal EPA and EPA Air Program
- Conceptually similar to 1991 MTCA approach
- Suggested by MTCA Science Advisory Board
- Considers lead exposure from the site

Integrated Exposure Model

Range of Potential Cleanup Levels

Preliminary Remediation Goals (mg/kg)– Integrated Exposure Model (Soil Concentration Rounded to Nearest Factor of 10)

Target Blood Lead Concentration (ug/dL)	Probability of Exceeding Target Blood Lead Concentration (%)		
	10%	5%	1%
10	520	420	270
5	200	150	90
2	30	10	NA
1	NA	NA	NA

Soil-Only Exposure Model

Range of Potential Cleanup Levels

Preliminary Remediation Goals (mg/kg)– Soil-Only Exposure Model (Soil Concentrations Rounded to Nearest Factor of 10)			
Target Blood Lead Concentration (ug/dL)	Probability of Exceeding Target Blood Lead Concentration (%)		
	10%	5%	1%
10	600	490	340
5	270	225	150
2	100	80	60
1	40	30	20

Draft Ecology Proposal/Rationale

- Scientific and policy reasons for a revised standard somewhere between 100 - 150 mg/kg
 - Consistent with current scientific information on health risks in children at blood lead levels > 10 ug/dL.
 - Consistent with state and federal policies that emphasize measures to prevent lead exposure.
 - Consistent with the health protection policies underlying the MTCA rule.
 - Complies with the MTCA statutory requirements.
 - Falls in the range of cleanup levels developed by other states.

Implications of revised lead soil cleanup level

- Higher percentage of soil samples would exceed a revised standard in the 100-150 mg/kg range
 - Revised standard between 100 and 150 mg/kg unlikely to impact cleanup decisions at sites where arsenic and lead are both present.
 - Revised standard between 100 and 150 mg/kg unlikely to impact cleanup decisions at sites where terrestrial ecological evaluation is required.
- Questions on impacts:
 - Areas adjacent to well-traveled roads
 - Sites with older buildings (lead-based paint)
 - Properties in urban core areas
 - Other??/

Lead Cleanup Levels for Other Media

- Air cleanup levels – New NAAQS is applicable requirement – compliance issues
- Ground water cleanup level – Current level (15 ug/L) falls in range of risk-based standards and cleanup requirements in other states.
- Sediment cleanup levels – Implications of policy choices will need to be considered during MTCA/SMS discussions.
- Industrial soil cleanup levels – Current level (1000 mg/kg) falls in range of risk-based standards and cleanup requirements in other states.

Discussion Questions

1. Do you have opinions on whether Ecology revise lead cleanup levels in this rulemaking? (Independent of whether you agree or disagree, does the rationale provided in the discussion paper make sense to you?)
2. Do you have opinions on the two key policy choices associated with revising the lead cleanup levels?
3. What implementation issues/concerns do you see arising if we change the method A soil cleanup level for unrestricted land uses (e.g., additional sampling, etc?)
4. What other rule changes would be needed/appropriate to support changes in cleanup levels?
 - Use of IEUBK model to establish site-specific levels (flexibility to consider other land uses)
 - Soil size fraction
 - Model remedies

Next Steps?

- Consider Committee Feedback – Written comments should be submitted by April 22nd
- Complete sensitivity analyses on key input parameters
- Review feedback and additional work when preparing revisions to Method A tables (June Meeting Topic)
- Discuss with Science Panel (Summer 2010)